PART 2

REGIONAL TRANSPORTATION SYSTEM MANAGEMENT

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OVERVIEW

Transportation system management is the set of tools and strategies used by transportation agencies to improve the travel experience for transportation system users and to operate our assets more effectively. Managing traffic, improving transit service and roadway infrastructure, responding to incidents and providing traveler information are system management programs that the public highly values according to MTC polls.

The regional transportation system management programs in the RTP are arranged into five categories, as listed below and shown in Table 1.

2.1 Multi-modal Integration
2.2 Transit Management Program
2.3 Arterial Management Program
2.4 Freeway Management Program
2.5 Strategic Planning

This chapter gives an overview of each category and then describes the projects within the category. For each project, the methodology for determining funding needs and revenue assumptions is explained. In addition, the project enhancements proposed for the RTP Blueprint Alternative and the associated costs are described. The basis for determining future needs, revenue assumptions, and blueprint costs can be described generally:

- **Methodology For Determining Future Funding Needs**. The future funding needs are based primarily on the costs to continue to operate the project at its current scope and do not assume project expansion, except where noted. All project cost estimates include lifecycle costs.

- **Revenue Assumptions**. Regional funds are just one of many funding sources that support the regional system management projects. The specific other funding sources and amounts vary by project; however, some projects included in the RTP rely on other sources for as much as 80% of their total funding needs over the 25 year RTP. Other significant sources of funding for these projects include dedicated state funding for freeway management projects, state funding that comes to

MTC specifically for transit coordination efforts, state funding for projects that improve air quality, and contributions from local jurisdictions and transit operators participating in projects such as the Pavement Management Technical Assistance Programs and TransLink®.

- **Blueprint Alternative Project Assumptions**. Blueprint project assumptions include enhancements or expansions that would be implemented if additional funding were available. Where available, capital and operating cost estimates associated with these assumptions are also provided.

It should be noted that this chapter focuses on system management efforts where there is a strong regional role in funding decisions or implementation. While many system management approaches are regional in nature, others can be implemented at a corridor or local level. For example, in the 2001 RTP, a number of system management projects are described in the sections on Corridor Investments. Examples of such projects include arterial Smart corridors for arterial management, local commitments to the freeway operations system for freeway management, and transit automatic vehicle location (AVL) systems for transit management. A number of locally sponsored system management projects are identified in the chapters on Committed and Track 1 investments by corridor. Look for the following:

Transit Management Program

- BART Advanced Automatic Train Control System

Arterial Management Program

- San Francisco Integrated Traffic Management System
- Smart Corridor signal synchronization programs in Santa Clara and Alameda Counties
- Non-capacity increasing improvements, which often include signal timing and interconnection, to streets and roads in each county
- VTA System Operations and Management Program

Freeway Management Program

- Traffic Operations System enhancements on I-580 and I-680
- Traffic Operations System enhancements on Route 237 and I-880
- State Route 37 traveler information system

Table 1: Regional Transportation System Management Projects
(In Millions of 2001 Dollars)

System Management Category		Track 1	Blueprint
2.1	***Multi-modal Servicezs***		
	Ridesharing Program	$55.9	$47.5
	TravInfo®	$126.0	$50.0
	Transportation Marketing/ Regional Transit Information	$28.9*	$39.9*
	Spare the Air Campaign	$25.0	$0.0
2.2	***Transit Management Program***		
	TransLink®	$138.8	$15.0
2.3	***Arterials Management Program***		
	Traffic Engineering Technical Assistance (TETAP)/ Arterial Signal Re-timing	$31.9	$49.0
	Pavement Management Technical Assistance (P-TAP)	$15.4	$25.0
2.4	***Freeway Management Program***		
	Freeway Service Patrol/ Call Boxes	$39.6**	$65.2**
	Freeway Operations Systems	$45.5	$91.0
	CLEAR Incident Management	$0.0	$52.8
2.5	***Strategic Planning***		
	Performance Monitoring	$2.8	$0.0
	Regional ITS Integration	$0.0	TBD

* Combined for Marketing and Regional Transit Information programs.
** Combined for Freeway Service Patrol and Call Boxes programs.

2.1 MULTI-MODAL SERVICES

The projects in this category provide services to customers across multiple transportation modes. The Ridesharing program makes it easier for travelers to find vanpool or carpool partners and also provides information on bicycling and transit. TravInfo®'s traveler information phone number provides real-time traffic information as well as direct connections to transit operators. The concept is to provide as much information and service as possible at a single source to let travelers know their alternative travel mode options. The Regional Transportation Marketing/Transit Information Programs aim to make people more aware of transportation alternatives and of the customer service programs available to transportation system users. The Spare the Air Program is closely tied to the Regional Transportation Marketing Program in its efforts to make people aware of the transit and carpooling options.

RIDESHARING PROGRAM

The Regional Rideshare Program's objective is to shift individuals from single occupant vehicles (SOVs) to carpools, vanpools and other transportation alternatives and help individuals sustain this shift in order to mitigate the growth of traffic congestion and motor vehicle emissions in the Bay Area. The program accomplishes this primarily by:

- Providing information about transportation alternatives to driving alone;
- Providing services through an automated ridematching system to support the use of carpools and vanpools;
- Providing information that promotes the use of carpool and Park-and-Ride facilities;
- Conducting region-wide marketing campaigns and outreach efforts to the public and employers.

Methodology For Determining Future Funding Needs. The RTP Track 1 program would provide $55.9 million for the Regional Rideshare Program. Capital estimates include updating of the ridematching system and in-station transit information system, and assumes a 5-year replacement cycle. Operating expenses include contract services.

Revenue Assumptions. Beginning FY 2003/04, the program will be funded through regional Congestion Mitigation and Air Quality (CMAQ) funds, regional Transportation Fund for Clean Air (TFCA) funds, and Transportation Development Act (TDA) funds. This funding arrangement reflects the regional nature of the project. One exception to this regional funding policy is to allow Contra Costa to cover their contribution through TFCA Program Manager funds in lieu of its estimated CMAQ share.[1] The estimated RTP funding need assumes an annual contribution of $1 million from the Air District's Transportation Fund for Clean Air and $250,000 in MTC TDA through the 25-year period.

[1] If Contra Costa does not approve TFCA Program Manager funds in an amount equal to its share for this purpose, that balance of the Contra Costa share of program funding will revert to CMAQ.

Blueprint Project Assumptions. The Blueprint project would increase incentives for individuals who currently drive alone to shift to carpools, vanpools, and other transportation alternatives. A Regional Vanpool Incentive would be offered to subsidize vanpooling costs. A Regional Guaranteed Ride Home Program would be established to serve as a transportation safety net for individuals who choose to share a ride instead of driving alone. A marketing campaign involving radio, television and electronic and print media advertisements would be implemented to promote program access and services. The program's ability to organize and staff major outreach events such as Bike-to-Work day would be increased. Partnerships with large venues attracting people from around the region would be established and promotions to support accessing these venues by means other than driving alone would be jointly marketed. Multilingual materials would be augmented. Program staff would be increased and reorganized to focus on smaller transportation corridors and to support employer outreach and the administration of the previously described programs.

The estimated cost for the Blueprint project is $47.5 million based on an annual operating cost of $1.9 million.

TRAVINFO®

TravInfo® is the Bay Area's advanced traveler information system. Its 817-1717 telephone (TTY: 817-1718) number provides real-time information on traffic incidents, slowdowns, road construction activity, and major transit service interruptions as well as direct telephone connections to transit, paratransit, and rideshare agencies. The telephone number is the single regional telephone number by which travelers can access information from all participating local transportation organizations, including over 24 different transit agencies, two regional ridesharing organizations, 20 paratransit services, the California Department of Transportation (Caltrans), and the California Highway Patrol (CHP). During major incidents affecting Bay Area travelers, such as the 1998 winter floods, the 817-1717 service has provided timely, specific information to as many as 10,000 callers a day. The information provided by TravInfo® helps promote efficient use of the region's transportation assets.

In the next year, TravInfo® will be one of the first systems in the nation to migrate to a 511 number; 511 is the standard national phone number for traveler information. In the same timeframe, TravInfo® will develop additional ways for travelers to access its information, such as through web pages, pagers, and other mobile devices and will continue to enhance its data collection and processing to ensure that reliable data is maintained to support the accuracy of the information provided. TravInfo® is overseen by the Bay Area Freeway Management Program Executive Committee which has representatives from MTC, CHP and Caltrans.

Methodology For Determining Future Funding Needs. MTC has a 6-year contract with PB Farradyne to design, build, operate, and maintain the TravInfo® system. RTP Track 1 funds would provide $126 million for TravInfo® over the next 25 years. The RTP funding need includes planning costs for technical assistance and performance monitoring. Capital cost estimates include data fusion, data dissemination and data collection and assume a 4-year capital

replacement cycle. Operating cost estimates include telephone operations and maintenance, traveler information center operations, and marketing.

Revenue Assumptions. Over 25 years, about 88.5% of TravInfo® funding would come from RTP Track 1 sources.

Blueprint Project Assumptions. The Blueprint project would include enhancements and improvements to existing and propose future TravInfo® operations and infrastructure. Examples of improvements include data collection and fusion to allow for dissemination of more real-time traffic and transit information, speech recognition system to provide a better user interface, and live operator assistance to complement the automated system.

The estimated cost of the Blueprint project is $50 million based on an annual operating cost of $2 million per year.

REGIONAL TRANSPORTATION MARKETING PROJECT/REGIONAL TRANSIT INFORMATION

a) **Regional Transportation Marketing**

The underlying goals of the marketing project are to support managers of MTC's customer service projects by generating market research data to inform product development, to develop and implement promotional campaigns for those projects, to develop project performance standards and to evaluate and report on project performance. Customer service projects include TransLink®, TravInfo®, the TakeTransit Trip Planner, the regional rideshare program, Freeway Service Patrol and the Callbox Program. In addition, this program supports regional marketing campaigns by working with transit agency representatives on the Regional Transit Marketing Committee.

A major objective of this regional marketing project is to implement a branding strategy for customer service projects. The branding effort will support efficient and effective marketing of these projects. In addition, the branding strategy will define consumer segments based on market research. Market research and market segmentation will help project manager to tailor projects to meet specific needs, and ensure that they provide value to travelers.

The project includes an emphasis on market research to gain an understanding of what Bay Area travelers want from the transportation system and how well current projects are serving them. It employs various mass media, events, and venues to promote public transportation and MTC's customer service projects. It also coordinates marketing activities among partners (e.g. Spare the Air campaign, Caltrans traffic mitigation programs, coordinating transit services to PacBell Park). The project includes development of project performance measures, which will be utilized in reporting to Commission committees and partner agencies about project outcomes.

b) **Regional Transit Information System**

MTC and the region's transit operators are currently developing and implementing a system of transit information services designed to make it easier for transit users to plan trips throughout the Bay Area. Currently, the general public is able to access route, schedule, and fare information on all Bay Area transit agencies at the *transitinfo.org* web site. Transit users are also able to use the internet to access TakeTransit[SM], a system that provides point-to-point transit itineraries for any transit trip on or between AC Transit, ACE, BART, Caltrain, CCTA, Emery Go-Round, Muni, Union City Transit, Tri-Delta Transit, WestCat, and ferries. Over the next year, it will expand to cover all of the major transit agencies in the region

In addition, all of the participating transit agencies will have the same system in their call centers, enabling them to provide callers with itineraries that use more than one transit agency. Both TakeTransit[SM] and ***transitinfo.org*** will rely on the Regional Transit Database (RTD), which is currently being developed. The RTD will provide one data source for all transit data in the Bay Area, allowing TakeTransit[SM] and transitinfo.org to operate more efficiently, and also providing a resource for other projects and agencies that might need access to transit data.

Methodology For Determining Future Funding Needs. These projects would receive $28.9 million in RTP Track 1 revenues. Operating estimates include all regional transportation marketing activities associated with MTC's customer service projects and the image campaign. Capital estimates include equipment (PCs, servers, etc.), software, licenses and royalties associated with the Transit Information Project and assume a 4-year equipment replacement cycle. Operating estimates include user and system support, GIS basemap maintenance, frame relay service agreement.

Revenue Assumptions. The RTP assumes roughly an even split between STA Regional Discretionary funds and RTP Track 1 sources to fund these programs.

Blueprint Project Assumptions. The enhanced marketing project would consist of a more integrated and sustained marketing program to better serve the customer service projects. A regional market research effort would be initiated to more specifically identify travelers' needs and demands for information related to travel options, as well as to gauge travelers' interest in new services or products. This research would also result in marketing of regional products and services could be more effectively targeted to appropriate populations. The enhanced marketing project would go beyond providing printed information to fund outreach events and stakeholder education related to customer service projects. This project would provide funding for enhanced customer service activities.

The enhanced transit information project would provide resources to hire additional consultant staff to assist transit agencies in collecting route data and converting it to a format that the RTD can use. The Blueprint project would also upgrade the quality assurance and quality control process being used to monitor

the quality and accuracy of the data residing in the Regional Transit Database (RTD).

The estimated cost of the Blueprint project is $39.9 million, which is based on an estimated annual operating cost of $1.5 million for the marketing program and $80,000 for the Transit Information Program. Capital costs amount to roughly half a million.

SPARE THE AIR CAMPAIGN

The Spare the Air program, in operation since 1991, aims to reduce ozone on days when the Bay Area's air pollution is expected to exceed federal and state air quality standards. Since motor vehicles are the single largest source of air pollution in the Bay Area, the Spare the Air campaign devotes significant attention to encouraging people to drive less on Spare the Air days. The campaign has the following objectives:

1. Encourage Bay Area residents to change their behavior in order to reduce ozone levels associated with hot weather.
2. Increase public awareness about how behavior can improve air quality.
3. Forecast and alert the public of potentially unhealthy air quality events; and
4. In the long run, reduce the number of ozone action days in the Bay Area and improve the overall air quality for the Area's residents.

Spare the Air uses a variety of approaches to inform and educate the public about summer ozone problems, notify individuals when Spare the Air days are called, and encourage people to use transit, ridesharing, trip-linking, trip elimination, and other smog-reducing strategies.

The Spare the Air campaign is managed by the Bay Area Air Quality Management District and supported by the Bay Area Clean Air Partnership, a public/private joint effort headed by regional business interests. Key participants include more than 1,750 Employer Spare the Air members who notify over one million employees of Spare the Air days, radio, television and print media outlets, transit agencies, one hundred cities and counties, MTC, and Caltrans.

Methodology For Determining Funding Needs. Regional contributions to the program are expected to continue at their current level, $1 million per year, for 25 years. Growth in the program would be funded through private and other sources.

Revenue Assumptions. This project would receive $1 million annually in RTP Track 1 revenues; an equivalent amount would be provided by the Air District, transit operators, and private employers in direct and in-kind contributions.

Blueprint project assumptions. No expansion is assumed.

2.2 TRANSIT MANAGEMENT PROGRAM

MTC adopted a Transit Coordination Implementation Plan in February 1997 to address the requirements of SB 1474. This plan puts high priority on projects that will provide improvements to passengers in the near term, benefit the largest numbers of transit users, improve productivity, and enhance the ability of transit riders to reach destinations.

Two of the projects described here, TransLink® and Transit Trip Planning, are critical elements of the Transit Coordination Plan. The region has to balance the existence of local transit services designed to meet local travel needs with the transit services needed to carry passengers effectively between jurisdictions. The projects address the need for cooperation and commitment from transit agencies to provide comprehensive services that are simple to understand, accessible to all potential customers, provide an ease of transfer that encourages transit use for those who have a choice and especially those who are dependent on public transit for their daily travel.

In addition to the regional transit coordination project described here, transit connectivity is enhanced by operations systems implemented by individual transit operators. In particular, Automatic Vehicle Location (AVL) systems have the potential to improve transit connectivity by providing real-time information on vehicle locations that help operators and users better coordinate transfers between systems.

TRANSLINK®

One of the key elements of the transit coordination efforts is development of a universal transit ticket program. The universal transit ticket program will establish a single regional system for collecting fares on all of the Bay Area's transit systems. The objectives of the program are to: 1) improve passenger convenience in making inter- and intra-agency trips; 2) improve the efficiency and security of the region's fare collection systems; 3) improve transit system data collection for service planning purposes and development of fare policies; and 4) take advantage of revenue-enhancing or cost-saving business partnerships with the private sector. The specific program under development is termed "TransLink®".

TransLink® is an automated fare collection program centered around a "smart card" that will be accepted for fare payment by all Bay Area transit operators for both intra- and inter-operator trips. Customers will be issued rechargeable smart cards that can be used for fare payments on the region's bus, rail and ferry systems. After purchasing their TransLink® card, customers can add value to them at vending machines, ticket offices and merchant locations. The cards will hold a dollar value, much like current BART tickets, as well as stored rides and monthly passes. Whatever fare or transfer charge a transit agency sets will be deducted from the card when it is used to board or exit a vehicle or pass through a faregate. A central service bureau will be established to manage TransLink® services and to operate the financial clearing functions through which individual agencies are compensated for services provided.

As lead agency for the TransLink® project, MTC is responsible for the procurement of equipment and services necessary to support an initial demonstration, evaluation of the demonstration and eventual full regional

implementation, and the ongoing coordination of TransLink® services among the participating transit agencies. MTC and Bay Area Transit Operators are working together to develop a future governance strategy for the permanent deployment of TransLink®.

Methodology For Determining Future Funding Needs. MTC has a 10-year contract with Motorola to design, build, operate, and maintain the TransLink® system. RTP Track 1 funds would provide a total of $138.8 million for TransLink® over the RTP period. Capital estimates include development, installation, cards, equipment and a 10% capital contingency after FY 2002/03. The estimate assumes a 7-year equipment replacement cycle. The operating estimate includes all services in the Motorola implementation contract.

Revenue Assumptions. Non-RTP/local match revenue assumptions include STA Regional Discretionary funds to cover fixed operating costs, transit operators to cover variable operating costs, and TransLink® revenues. Over 25 years, about 22% of the TransLink® budget comes from RTP sources.

Blueprint Project Assumptions. The Blueprint project would provide equipment, maintenance, and other enhancements to accommodate expansion of existing transit fleets and systems as well as new transit services.

The estimated cost of the Blueprint project is $15 million, of which $10 million is for capital. Annual operating costs are estimated to be $200,000.

2.3 ARTERIAL MANAGEMENT PROGRAM

Arterial streets throughout the region provide access to homes, schools, and businesses for pedestrians, bicyclists, transit riders, delivery firms, and motorists. The arterials included on the Metropolitan Transportation System (MTS) also provide access to freeways, transit hubs and intermodal stations, and major destinations. The arterial management program is focused on keeping the MTS arterials operating safely and efficiently by providing technical assistance to local agencies and information on new technologies to local traffic engineers.

Local jurisdictions are responsible for maintaining and managing local arterials. Key components of the arterial management program are: pavement management, retiming arterial traffic signals as traffic conditions change, coordinating traffic signals within and across jurisdictions, and implementing "smart" signal systems that can adjust signal timing to respond to changing conditions. MTC has established two programs, the Traffic Engineering Technical Assistance Program and the Pavement Management Technical Assistance Program to assist local agencies with their arterial management programs.

TRAFFIC ENGINEERING TECHNICAL ASSISTANCE PROGRAM (TETAP)/ ARTERIAL SIGNAL RE-TIMING

MTC established the Traffic Engineering Technical Assistance Program (TETAP) in 1993. Through TETAP, MTC provides consultant assistance to local agencies to 1) retime traffic signal systems, and 2) analyze an existing problem, conceptualize solutions, and provide technical assistance with a grant application to implement the preferred solution. MTC retains several traffic-engineering firms for TETAP, and makes their services available to local agencies for specific, low cost projects ($10,000 - $20,000). MTC solicits requests for TETAP projects from local agencies, reviews and prioritizes the requests, and assigns a firm to work directly with the local agency.

TETAP was created to:

1) Help implement federal Transportation Control Measures (TCMs): TCM 24 (expand signal timing to new cities) and TCM 25 (maintain signal timing systems), which are cost effective means of reducing emissions, and
2) Enhance the Bay Area's ability to take advantage of the increased flexibility in using federal funds.

Retiming traffic signals typically reduces travel time by 10% and reduces delay by over 20%. However, it appears that less than half of the Bay Area's roughly 7,000 signals have been retimed in the past 5 years. Therefore, MTC is proposing to separate TETAP into two programs, one to provide funds to ensure every signal is retimed at least once every 5 years, and the other to continue to provide assistance in analyzing and solving existing problems.

Methodology For Determining Future Funding Needs. RTP Track 1 funds would provide a total of $31.9 for TETAP. The methodology assumes continuation of the program at the current level of $250,000 per year ($5.5 million), plus retiming 1,200 signals/year at $1,000/signal for 22 years ($26.4 million).

Revenue Assumptions. Regional funds are the primary funding source for this program. The local match is provided by MTC through staff time.

Blueprint Project Assumptions. It is estimated that approximately 2,000 of the region's 6,000 traffic signals are on the MTS. This project would replace those 2,000 traffic signal controllers and cabinets with state-of-the-art controllers ($20 million), add 500 mid-block system detectors ($6 million), and install a fiber optic interconnect system between half of the signals ($13 million). The project would also provide 20 traffic management centers ($10 million). The Blueprint project would provide additional funding beyond the RTP and accelerate delivery of the improvements.

The total estimated cost of the Blueprint project is $49 million in capital costs.

PAVEMENT MANAGEMENT TECHNICAL ASSISTANCE PROGRAM (P-TAP)

The Pavement Management Technical Assistance Program (P-TAP) was created to assist Bay Area jurisdictions in implementing and maintaining pavement management systems (PMS) for their local roadway network. With the success of early rounds of funding, P-TAP has expanded to include larger jurisdictions, essentially providing assistance to all Bay Area cities and counties. Many jurisdictions in the Bay Area are unable to implement a pavement management system because of the initial cost and staff time required to start-up the program. Others are not able to maintain their systems because of staff turnover and lack of experience. One third of Bay Area local roadway network mileage is located in jurisdictions that are unable to establish or maintain their pavement management systems.

Methodology For Determining Future Funding Needs. RTP Track 1 funds would provide a total of $15.4 million for P-TAP. The methodology assumes a continuation of the current program over 25 years at the current level of $700,000 per year.

Revenue Assumptions. RTP funds are the primary funding source for this program;the local match is contributed by recipients of the planning grants.

Blueprint Project Assumptions. With additional funds available, P-TAP will be able to expand the basic PMS implementation and maintenance projects to include other activities. These include: (1) linking a PMS with GIS mapping; (2) providing assistance with pavement rehabilitation project design work, and (3) providing assistance to local jurisdictions with grant applications.

The estimated cost for the Blueprint project is $1 million per year for a total of $25 million over the RTP period.

2.4 FREEWAY MANAGEMENT PROGRAM

The Freeway Management Program consists of the ongoing efforts led by Caltrans, the California Highway Patrol (CHP), and MTC to coordinate and manage activities directly related to the operation of the freeway system. These activities include monitoring real-time system performance, responding to and managing congestion, responding to and managing incidents, providing traveler information, and managing law enforcement activities that affect traffic flow and safety. Elements of the Freeway Management Program included in the RTP and Blueprint are a Freeway Operations System, which provides monitoring and congestion response and management functions, and several incident management programs (Freeway Service Patrol, Call Boxes, and CLEAR).

The I-80 Demonstration Corridor in Alameda and Contra Costa Counties initiated in the summer of 2001 is an example of how these efforts work together for coordinated freeway management. During morning and evening commute periods, CHP runs aircraft surveillance to help identify accidents. CHP will deploy extra officers under the CLEAR program to respond quickly and efficiently to accidents. Freeway Service Patrol (FSP) tow trucks will run at the same time to assist CHP in responding to accidents and motorists in need. In-road detectors and video cameras that are part of the Freeway Operations System will gather real-time information on roadway conditions. Incident logs gathered by CHP in real time are a key source of information on accidents and other events that require response. This information will be processed by CHP through the Transportation Management Center that will act as a clearing house and will transmit this information to travelers through TravInfo®.

FREEWAY SERVICE PATROL (FSP)/CALL BOXES

a) Freeway Service Patrol

FSP is the Bay Area's freeway incident detection and removal program. The program has been in operation since 1992 and is a partnership between Caltrans, the California Highway Patrol and MTC Service Authority for Freeways and Expressways (SAFE). As of July 1, 2001 there were 30 beats that cover roughly 400 centerline miles with 68 trucks. Approximately 110,000 incidents are cleared each year.

FSP's primary purpose is to cut down on traffic jams by quickly clearing accidents and other incidents that account for more than 50 percent of traffic congestion. A swift response also reduces the chance of further accidents and bottlenecks caused by impatient drivers and gawkers. By alleviating start-and-stop traffic and vehicle idling due to traffic jams, FSP has also decreased overall fuel consumption and helped reduce harmful air pollution from motor vehicles.

b) Call Boxes

The call box program has installed and operated yellow call boxes on roadsides in the nine-county Bay Area since around 1991. The program is run by the MTC Service Authority for Freeways and Expressways (SAFE).

Today, an average of 8,000 calls are placed each month from approximately 3,500 MTC SAFE call boxes on freeway roadsides.

The call box program provides assistance to motorists in trouble, allowing them to report a road hazard, a flat tire or a mechanical breakdown. Like FSP, the call box network helps in the region's fight against traffic gridlock and smog by reducing incident related congestion.

Methodology For Determining Future Funding Needs. The baseline FSP and Call Box programs would receive $39.6 million in RTP Track 1 revenues. The estimate assumes a baseline FY 2000/2001 FSP tow service of 28 beats generally operating 3-hour morning and evening shifts, and operations and maintenance (e.g. call answering) of a network of 3,500 call boxes. A 5-year lifecycle is assumed for FSP capital investments (in-vehicle, and telecommunications equipment); a 10-15 year lifecycle is assumed for call box internal components and infrastructure.

Revenue Assumptions. The RTP funding need assumes non-RTP/local match revenues of State FSP funds through FY 2025/26 and SAFE funds ($1 surcharge on Bay Area vehicle registration) through FY 2010/11.

Blueprint Project Assumptions. The Blueprint projects would provide enhancements and improvements to existing and proposed future FSP and Call Box operations and infrastructure. Specific improvements to FSP could include: provision of fleet management and dispatch operations at the Oakland Caltrans Transportation Management Center (TMC), service for 8 to 12 additional freeway segments during the commute period, expand service on existing service areas (i.e., add new trucks and extend hours of operation to include midday and weekend service) and an upgrade to the telecommunications system. Specific improvements for Call Boxes could include: upgrade of the communications network to a digital system, and further integration of the call boxes into the Caltrans Transportation Management Center (TMC).

The estimated cost for the Blueprint projects is $65.2 million of which $4.8 is for capital. The annual operating expenses are estimated to be $2.5 million.

FREEWAY OPERATION SYSTEMS

Freeway operations refers to the activities that directly affect the safety, travel time, travel route selection, time of travel, or mode of travel, of travelers using or planning to use the freeway network. The goals of improving safety, efficiency, and reliability of the freeway system are dependent on several real-time freeway operation functions, including monitoring, surveillance, incident detection, providing information to motorists, incident clearance, and restoring network capacity. Caltrans, CHP and MTC work together, and with local agencies, to improve freeway operations. The three regional agencies are working on the 'Concept of Operations' project to define a shared vision for freeway operations, coordinate policies and procedures across jurisdictions, build consensus on the roles, responsibilities, and resource needs for Freeway Operations, and define an Action Plan to guide future collaborative efforts.

Methodology For Determining Future Funding Needs. It is estimated that Freeway Operations Systems need $91 million, and that one half ($45.5 million) would be funded with RTP Track 1 revenues. This number represents a placeholder until the I-80 CLEAR Demonstration Program, the Freeway Concept of Operations, and other joint efforts provide future direction regarding investments.

Revenue Assumptions. The remaining 50% of the need would be addressed through State funding.

Blueprint Project Assumptions. Upgrade Freeway Operations Systems to provide improved response to commute period and incident related congestion, and expand to cover a larger portion of the freeway network. Several of the Freeway Operations Systems are addressed in the RTP as separate regional customer service projects (TravInfo®, FSP), while others are addressed at the corridor level (Smart Corridors). This project provides funding to improve Freeway Operations, based on the consensus generated through the Concept of Operations project regarding roles, responsibilities, and resources, and does not assume investment in any specific system. For example, need for improved monitoring of real time conditions could be provided by TOS, FSP, CHP patrols, or TravInfo®'s data collection system.

The estimated capital cost of the Blueprint project is $182 million. One half would be funded with regional revenue and one half by the state if the funds are invested in state-owned systems. It is assumed that Caltrans, CHP and MTC provide for ongoing operation costs through their operating budgets.

CLEAR Incident Management

In response to gubernatorial and public concerns about freeway congestion, Golden Gate Division of the California Highway Patrol (CHP) has developed the CLEAR program. CLEAR stands for Clearing Lanes Efficiently and Rapidly (CLEAR). Teams of officers are deployed to maintain the free flow of traffic by removing impediments as soon as possible to reduce commuter delay and ensure the safe, lawful and efficient use of the highway transportation system. The CLEAR program was initiated in 2001 with 24 officers along selected freeway corridors. The initial CLEAR deployment corridor segments are located on I-580/I-880/I-80 in Alameda and Contra Costa Counties, US 101 in Marin, San Francisco and Santa Clara Counties, the SR 92 in San Mateo County, and I-680 in Alameda County.

The CHP CLEAR program is part of the ongoing Freeway Management Program undertaken by the regional partnership of MTC, Caltrans District 4, and the CHP. The Freeway Service Patrol and the Caltrans bridge tow service actively assist with the program, and the Transportation Management Center (TMC) and TravInfo® are also instrumental in helping to achieve effectiveness of the CLEAR program. CHP has an ongoing evaluation of the program.

The CHP intends to expand the CLEAR program with deployment of existing resources, as staffing allows, to other freeway corridors in the Bay Area region experiencing increased traffic congestion. In addition to the regional partnership resources, the CHP is enlisting the support of allied law enforcement agencies, fire and medical emergency responders and other stakeholders through corridor task forces in developing freeway incident management plans that address transportation corridor congestion crossing multiple jurisdictions.

Methodology For Determining Future Funding Needs. The baseline CLEAR program is fully funded by CHP through the RTP period and would not receive any RTP revenues.

Blueprint Project Assumptions. As the periods of peak commute congestion increase, and the volume of traffic in the off-peak also increases, there will be an increased need to respond to and clear incidents as quickly as possible. Personnel resources for the CLEAR program are currently funded through the CHP's annual operations budget. By investing regional funds through interagency reimbursable services contracts, the CHP would be able to provide the supplemental resources necessary to support the freeway management congestion relief efforts.

The estimated total operating cost is $52.8 million to add 24 motorcycle officers over the RTP period. The capital costs are to be determined.

2.5 STRATEGIC PLANNING

Effective transportation system management requires strategic planning in addition to the programs that directly serve travelers and help operate the system on a day-to-day basis. Strategic planning helps us to understand how the system is functioning and how we can better direct program resources in the future. Two important aspects of strategic planning for system management are included here: Performance Monitoring, which is used to inform system operators as well as the public about how the transportation system performs over time; and Regional Intelligent Transportation Systems (ITS) Integration, which aims to reap benefits from integrating technology systems across individual projects.

PERFORMANCE MONITORING

MTC intends to begin collecting data on the performance of the existing transportation system for publication in a state of the system report. This program would monitor changes in system performance over time with a focus on the customer's perspective. Past Partnership efforts identified mobility and system reliability as two critical areas and identified travel time and variability of travel time as good corresponding multi-modal performance measures. In 1998-99 MTC conducted the Travel Time Pilot Project to explore various methods of collecting data on travel time and variability of travel time for a range of modes and markets. Other data of interest include a measure of the level of customer satisfaction with the transportation system. Performance monitoring reports will also make use of existing data collected by transit operators, local jurisdictions, and Caltrans.

Methodology For Determining Future Funding Needs. The RTP assumes $160,000 is needed annually to monitor performance. This amounts to $2.8 million for the 25 year period. This estimate is based on current costs to county congestion management agencies and Caltrans for their congestion monitoring efforts.

Revenue Assumptions. The program is funded largely through regional funds. Matching funds (11.8%) are provided by MTC with TDA revenues that are part of MTC's operating budget.

Blueprint Project Assumptions. No program expansion is assumed.

REGIONAL INTELLIGENT TRANSPORTATION SYSTEMS (ITS) INTEGRATION

Increasingly, computer and electronic communications systems are becoming integral components of our transportation system. Called Intelligent Transportation Systems (ITS), these systems and technologies can be found throughout the San Francisco Bay Area. Examples range from MTC's TransLink® and TravInfo® and Caltrans' freeway management system to local projects such as San Francisco's traffic management center, and a variety of transit projects including San Francisco Muni's real-time bus arrival demonstration and other automated vehicle location and tracking projects to improve transit operations.

With effective coordination, ITS projects can further improve the overall safety, effectiveness, and efficiency of the surface transportation network.

In FY 2001-02, MTC began a regional ITS strategic deployment/integration plan and development of a regional systems architecture. These efforts aim to systematically evaluate the potential benefits of integrating ITS projects across jurisdictions and modes. The architecture will provide a functional framework to describe information flows between components of the integrated system. Ultimately, the effective integration of ITS projects in the region is intended to provide cost efficiencies while enhancing system operation through ensuring that quality information is available at the right place and time. These efforts will also meet recently established federal regulations on all federally-funded projects containing ITS components.

Methodology For Determining Future Funding Needs. The regional ITS integration costs are unknown at this time. The ITS Strategic Deployment/Integration Plan and Regional ITS Architecture documents will outline the required system-wide communications infrastructure, software development, and maintenance for the long term. The RTP Track 1 program assumes that necessary ITS components are built into individual projects.

Blueprint Project Assumptions. The estimated costs of the Blueprint project are not known at this time. Some of these costs will be estimated in connection with work currently under procurement by MTC and will be included in future RTP updates.